Hit Rate Investigation

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GRCI

Background

- Common Syntax and Semantics (CSS) are considered essential for efficient and effective HLA Federation Object Model (FOM) and Simulation object Model (SOM) development
- Problem to Investigate: Determine the suitability of the Defense Data Dictionary System (DDDS) as a basis for CSS entity representations
- Approach: Map DIS Protocols and selected FOM/SOMs to DDDS and estimate equivalent attributes within time/ resource constraints

Methodology

- Protocols/FOMs/SOMs to be used:
  - DIS Protocols (IEEE Std 1278)
  - Modular Reconfigurable C4I Interface (MRCI)
  - Engineering Protofederation HLA
- Compared to DDDS approved standard data elements as of 22 Aug 1996
- Comparison used DART PC based tool to capture FOM/ SOM metaobjects, perform comparisons, record results, and generate reports (DART structures based on DoDD 8320.1 requirements)

Data Capture Results to Date

- DIS : All PDUs and Records entered into DART, and 54 of the Fields
- MRCI : CTAPS SOM with all of its attributes entered, and the Communications Object
- Engineering Protofederation : Just beginning, nothing entered yet.

Structure Mapping into DART

DART Structure	DIS Protocol Structure	MRCI Structure
Systems/Database	DIS Protocol	MRCI
Subject Area	PDU	SOM or Comm Object
Table	Record or Variant	Interaction Structure
Physical DE	Field	Attribute
Domain Value	Enumeration	Enumeration

Criteria for Equivalence

- *DISA criteria for Match/Map to DDDS not used as sufficient metadata is not available*
- **Equivalent**: semantics close, possibility of a match or map when metadata is complete
- **Similar**: Semantics close, but a match or map with complete metadata isn't likely. Could propose a new DDDS data element
- **Questionable**: Semantics may or may not be close; not enough information to decide. In some cases, may be an attribute equating to an entity, or a similar structural problem.
- **No Match**: No items with similar concepts or semantics. Could propose a new DDDS Prime Word.

Equivalence Results

Condition	**DIS Protocol**	**MRCI**
Total	54 (100%)	110 (100%)
Equivalent	20 (37%)	54 (49%)
Similar	15 (28%)	45 (41%)
Questionable	4 (7%)	8 (7%)
No Match	15 (28%)	3 (3%)

Comments on Analysis

- DDDS is most complete in logistic, contracting, and personnel areas
- DDDS is incomplete in regards to military operations
  - DDDS does not currently contain data elements necessary for monitoring plan execution; therefore awkward for C4I or Simulation use
  - DDDS does not contain much related to intelligence
  - C2 core view of DDDS is too abstract to relate well to operational data elements
  - Many Prime Words of interest to C4I have no attributes related to them